

WHAT IS CLAIMED IS:

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1. An apparatus, comprising:

a first sharing unit that shares a print  
environment thereof with other apparatuses,

wherein

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the first sharing unit includes:

a connection management unit that manages  
the connecting of the first sharing unit to a second  
sharing unit of another apparatus; and

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a transfer unit that transfers at least one  
of reservation information and a document related to  
a print reservation to the second sharing unit.

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2. The apparatus as claimed in claim 1,

wherein

the connection management unit adds  
connection data related to the second sharing unit to  
25 service data including other sharing units that are

connected to the first sharing unit in response to a connection request from the second sharing unit.

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3. The apparatus as claimed in claim 1,  
wherein

the connection management unit deletes  
10 connection data related to the second sharing unit to  
service data including other sharing units that are  
connected to the first sharing unit in response to a  
disconnection request from the second sharing unit.

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4. The apparatus as claimed in claim 2,  
wherein

20 the connection data related to the second  
sharing unit added to the service data are managed as  
one of upper level data, same level data, and lower  
level data depending on a relation between the first  
sharing unit and the second sharing unit.

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5. The apparatus as claimed in claim 2,  
5 further comprising:

a service data storage unit that stores the  
service data.

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6. The apparatus as claimed in claim 2,  
wherein  
the first sharing unit further comprises:  
15 an acquisition unit that acquires the  
service data from the second sharing unit.

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7. The apparatus as claimed in claim 1,  
wherein  
the first sharing unit further comprises:  
a consistency check unit that checks  
25 consistency of a connection state in which the second

sharing unit is connected to the first sharing unit  
and a disconnection state in which the second sharing  
unit is disconnected from the first sharing unit.

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8. The apparatus as claimed in claim 1,  
further comprising:

10           a reservation data storage unit that stores  
the reservation information and the document.

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9. The apparatus as claimed in claim 1,  
further comprising:

          a document acquisition unit that acquires  
the document.

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10. The apparatus as claimed in claim 1,  
25 further comprising:

a document management service unit that provides a service for managing the document.

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11. The apparatus as claimed in claim 1, further comprising:

a document storage unit that stores the document.

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12. The apparatus as claimed in claim 1, further comprising:

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a print service unit that provides service related to printing.

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13. The apparatus as claimed in claim 1, further comprising:

a print unit that prints the document.

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5                   14. A method of providing a sharing  
service in which a first sharing unit shares a print  
environment thereof with a second sharing unit, the  
method comprising the steps of:

                  managing the connecting and the  
10   disconnecting of the second sharing unit; and  
                  transferring at least one of reservation  
information and a document related to a print  
reservation to the second sharing unit.

15

                  15. The method as claimed in claim 14,  
further comprising the step of:

20                   adding data related to the second sharing  
unit to service data including data related to other  
sharing units to which the first sharing unit can  
refer, in response to a connection request from the  
second sharing unit.

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16. The method as claimed in claim 14,  
5 further comprising the step of:  
deleting data related to the second sharing  
unit from service data including data related to  
other sharing units to which the first sharing unit  
can refer, in response to a disconnection request  
10 from the second sharing unit.

15 17. The method as claimed in claim 15,  
wherein  
the data related to the second sharing unit  
added to the service data are managed as one of upper  
level data, same level data, and lower level data  
20 depending on a relation between the first sharing  
unit and the second sharing unit.

18. The method as claimed in claim 14,  
further comprising the step of:

checking consistency of a connection state  
in which the second sharing unit is connected to the  
5 first sharing unit and a disconnection state in which  
the second sharing unit is disconnected from the  
first sharing unit.

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19. A computer program that causes a  
computer to share a print environment thereof with  
another computer, the computer program comprising the  
15 steps of:

managing connecting and disconnecting of  
the other computer with the computer; and

transferring at least one of reservation  
information and a document related to a print  
20 reservation to the other computer.

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20. The computer program as claimed in



claim 19, further comprising the step of:

adding data related to the other computer  
to service data including data related to third  
computers to which the computer can refer, in  
5 response to a connection request from the other  
computer.

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21. The computer program as claimed in  
claim 19, further comprising the step of:

deleting data related to the other computer  
from service data including data related to third  
15 computers to which the computer can refer, in  
response to a disconnection request from the other  
computer.

20

22. The computer program as claimed in  
claim 20,

wherein

25 the data related to the other computer

added to the service data are managed as one of upper level data, same level data, and lower level data depending on a relation between the computer and the other computer.

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23. The computer program as claimed in  
10 claim 19, further comprising the step of:  
checking consistency of a connection state  
in which the other computer is connected to the  
computer and a disconnection state in which the other  
computer is disconnected from the computer.

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24. A computer readable recording medium  
20 that stores the computer program as claimed in claim  
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25. An apparatus, comprising:  
a first sharing unit that shares a print  
environment thereof with other apparatuses,  
wherein

5 the first sharing unit includes:  
a search unit that searches a print  
location; and

a transfer unit that transfers at least one  
of reservation information and a document related to  
10 a print reservation to a second sharing unit.

15 26. The apparatus as claimed in claim 25,  
wherein

the search unit further comprises:  
a route information acquisition unit that  
acquires route information about a route to the print  
20 location.

25 27. The apparatus as claimed in claim 25,

wherein

the search unit further comprises:

a service data acquisition unit that  
acquires service data including data about  
5 referential relation between sharing units from a  
third sharing unit.

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28. The apparatus as claimed in claim 25,  
wherein

the reservation information includes  
document identification information for identifying  
15 the document and document use permission information  
for being permitted to use the document.

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29. The apparatus as claimed in claim 25,  
wherein

the reservation information includes print  
location identification information for identifying  
25 the print location and route information to the print

location.

5,

30. The apparatus as claimed in claim 25,  
wherein

the reservation information includes  
printer identification information for identifying a  
10 printer.

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31. The apparatus as claimed in claim 25,  
wherein

the reservation information includes  
information about a print condition.

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32. The apparatus as claimed in claim 25,  
wherein

25 the first sharing unit further comprises:

a data adding unit that adds, in response to a connection request from the second sharing unit, data related to the second sharing unit to service data including sharing units other than the first sharing unit to which the first sharing unit can refer.

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33. The apparatus as claimed in claim 25, wherein

the first sharing unit further comprises:

a data deleting unit that deletes, in response to a disconnection request from the second sharing unit, data related to the second sharing unit from the service data including data related to sharing units other than the first sharing unit to which the first sharing unit can refer.

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34. The apparatus as claimed in claim 27, wherein

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the data related to the second sharing unit added to the service data are managed as one of upper level data, same level data, and lower level data depending on a relation between the first sharing  
5 unit and the second sharing unit.

10 35. The apparatus as claimed in claim 25,  
further comprising:

a service data storage unit that stores the service data including data related to a referential relation between the first sharing unit and other  
15 sharing units.

20 36. The apparatus as claimed in claim 25,  
wherein

the first sharing unit further comprises:  
a document acquisition unit that acquires  
the document.

25

5           37. The apparatus as claimed in claim 25,  
            wherein  
            the first sharing unit further comprises:  
            a printer data acquisition unit that  
acquires printer data.

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            38. The apparatus as claimed in claim 37,  
            wherein  
15           the printer data are managed by a  
corresponding sharing unit that shares a print  
environment thereof with other apparatuses.

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            39. The apparatus as claimed in claim 37,  
            wherein  
            the printer data are managed by a print  
25   service providing unit that provides a print service.



5           40. The apparatus as claimed in claim 25,  
            wherein  
            the first sharing unit further comprises:  
            a function information acquisition unit  
10           that acquires function information of a printer.

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            41. The apparatus as claimed in claim 25,  
15           further comprising a data storage unit that stores at  
            least one of reservation information and a document  
            related to the print reservation.

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            42. The apparatus as claimed in claim 25,  
            further comprising a document management service  
            providing unit that manages the document.

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43. The apparatus as claimed in claim 25,  
5 further comprising a document storage unit that  
stores the document.

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44. The apparatus as claimed in claim 25,  
further comprising a print service providing unit  
that provides a print service.

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45. The apparatus as claimed in claim 25,  
further comprising a print unit that prints the  
20 document.

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46. A method of providing a sharing

service in which a first sharing unit shares print environment thereof with a second sharing unit, the method comprising the steps of:

5                    searching for a print location; and  
transferring at least one of reservation information and a document related to a print reservation to the second sharing unit.

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47. The method as claimed in claim 46,  
wherein  
the step of searching for the print  
15 location further comprises the step of acquiring route information of a route to the print location.

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48. The method as claimed in claim 46,  
wherein the step of searching for the print location further comprises the step of acquiring service data including data about referential  
25 relations between sharing units from a third sharing

unit.

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49. The method as claimed in claim 46,  
wherein the reservation information  
includes document identification information for  
identifying the document and document use permission  
10 information for being permitted to use the document.

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50. The apparatus as claimed in claim 46,  
wherein  
the reservation information includes print  
location identification information for identifying  
the print location and route information to the print  
20 location.

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51. The apparatus as claimed in claim 46,

wherein

the reservation information includes  
printer identification information for identifying a  
printer.

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52. The apparatus as claimed in claim 46,

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wherein

the reservation information includes  
information about a print condition.

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53. The method as claimed in claim 46,

wherein

the first sharing unit adds, in response to  
a connection request from the second sharing unit,  
data related to the second sharing unit to service  
data including sharing units other than the first  
sharing unit to which the first sharing unit can  
refer.

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5           54. The method as claimed in claim 46,  
            wherein  
            the first sharing unit deletes, in response  
to a disconnection request from the second sharing  
unit, data related to the second sharing unit from  
the service data including data related to sharing  
10 units other than the first sharing unit to which the  
first sharing unit can refer.

15           55. The method as claimed in claim 46,  
            wherein  
            the data related to the second sharing unit  
added to the service data are managed as one of upper  
20 level data, same level data, and lower level data  
depending on a relation between the first sharing  
unit and the second sharing unit.

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56. The method as claimed in claim 46,  
further comprising the step of acquiring the document.

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57. The method as claimed in claim 46,  
further comprising the step of:

10           acquiring printer data including data  
related to printers.

15

58. The method as claimed in claim 57,  
wherein

          the printer data are managed by a  
corresponding sharing unit that shares a print  
20   environment thereof with other apparatuses.

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59. The method as claimed in claim 57,

wherein

the printer data are managed by a print  
service providing unit that provides a print service.

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60. The method as claimed in claim 46,  
further comprising the step of:

10 acquiring function information of a printer.

15 61. The method as claimed in claim 46,  
further comprising the step of:

receiving a reservation request for a print  
reservation.

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62. The method as claimed in claim 46,  
further comprising the step of receiving a print

25 request.



5                   63. A computer program that causes a  
computer to share a print environment thereof with  
another computer, the computer program comprising the  
steps of:

                  searching for a print location; and  
10               transferring at least one of reservation  
information and a document related to a print  
reservation to the other computer.

15

                  64. A computer readable recording medium  
that stores the computer program as claimed in claim  
63.

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                  65. A service providing apparatus,  
25   comprising:

a screen data providing unit that provides data related to a screen to a user terminal in response to a request from the user terminal; and

a print reservation request transmission  
5 unit that transmits a reservation request to a print environment sharing service providing unit in response to the request from the user terminal,

wherein

the service providing apparatus is included  
10 in a print environment sharing service providing system, the system further including:

at least one print environment sharing service providing unit including a print environment sharing service providing unit that provides a  
15 sharing service of a print environment; and  
the user terminal.

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66. The service providing apparatus as claimed in claim 65,

wherein

the screen is a document selection screen  
25 for selecting at least one of a print reservation and

a document.

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67. The service providing apparatus as  
claimed in claim 65,

wherein

the screen is a document overview screen  
10 that displays an overview of print reservations or  
documents to be printed.

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68. The service providing apparatus, as  
claimed in claim 65,

wherein

the screen is a print location selection  
20 screen for selecting a print location.

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69. The service providing apparatus as

claimed in claim 65,

wherein

the screen is a map screen related to a  
print location.

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70. The service providing apparatus as  
10 claimed in claim 65,

wherein

the screen is a printer selection screen  
for selecting a printer.

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71. The service providing apparatus as  
claimed in claim 65,

20 wherein

the screen is a print condition selection  
screen for selecting a print condition.

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72. The service providing apparatus as  
claimed in claim 65,

wherein

5           the print environment sharing service  
providing unit adds, in response to receipt of a  
connection request from another print environment  
sharing service providing unit, data related to the  
other print environment sharing service providing  
10 unit to service data including data related to other  
print environment service providing units to which  
the print environment sharing service providing unit  
can refer.

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73. The service providing apparatus as  
claimed in claim 65,

20           wherein

          the print environment sharing service  
providing unit deletes, in response to receipt of a  
disconnection request from another print environment  
sharing service providing unit, data related to the  
25 other print environment sharing service providing

unit to service data including data related to other  
print environment service providing units to which  
the print environment sharing service providing unit  
can refer.

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74. The service providing apparatus as  
10 claimed in claim 72,  
wherein

the data related to the other sharing unit  
added to the service data are managed as one of upper  
level data, same level data, and lower level data  
15 depending on a relation between the print environment  
sharing service unit and the other print environment  
sharing service unit.

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75. The service providing apparatus as  
claimed in claim 65, further comprising:

a service data acquisition unit that  
25 acquires, in response to a request from the user

terminal, service data including data related to  
referential relations between print environment  
sharing service providing units from the print  
environment sharing service providing units.

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76. The service providing apparatus as  
10 claimed in claim 65, further comprising:

a printer data acquisition unit that  
acquires, in response to receipt of a request from  
the user terminal, printer data including data  
related to printers to which the print environment  
15 sharing service providing unit can refer from the  
print environment sharing service providing unit.

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77. The service providing apparatus as  
claimed in claim 65, further comprising:

a function information acquisition unit  
that acquires, in response to receipt of a request  
25 from the user terminal, function information related

to functions of printers from the print environment sharing service providing unit.

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78. The service providing apparatus as claimed in claim 65, further comprising:

a document use permission information  
10 acquisition unit that acquires, in response to receipt of a request from the user terminal, document use permission information for permitting the use of the document from a document management service providing unit that provides a service related to  
15 management of documents.

20 79. The service providing apparatus as claimed in claim 78, further comprising the document management service providing unit.

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80. The service providing apparatus as claimed in claim 78, further comprising a document storage unit that stores the document.

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81. The service providing apparatus as claimed in claim 65, further comprising:

a print start request transmitting unit that transmits, in response to receipt of a request from the user terminal, a request to start printing, to the print environment sharing service providing unit.

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82. The service providing apparatus as claimed in claim 65, further comprising the print environment sharing service providing unit.

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83. The service providing apparatus as claimed in claim 65, further comprising a print service providing unit that provides a print service.

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84. The service providing unit as claimed in claim 65, further comprising a print unit.

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85. A method of providing a service for sharing a print environment, comprising the steps of:  
providing data related to a screen to a user terminal in response to a request from the user terminal; and

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transmitting a reservation request to a print environment sharing service providing unit in response to the request from the user terminal,

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wherein

the service providing apparatus is included in a print environment sharing service providing

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system, the system further including:

at least one print environment sharing  
service providing unit including a print environment  
sharing service providing unit that provides a  
5 sharing service of print environment; and  
the user terminal.

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86. The method as claimed in claim 85,  
wherein  
the screen is a document selection screen  
for selecting at least one of a print reservation and  
15 a document.

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87. The method as claimed in claim 85,  
wherein  
the screen is a document overview screen  
that displays an overview of print reservations or  
documents to be printed.

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5           88. The method as claimed in claim 85,  
            wherein  
            the screen is a print location selection  
screen for selecting a print location.

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            89. The method as claimed in claim 85,  
            wherein  
            the screen is a map screen related to a  
15 print location.

20           90. The method as claimed in claim 85,  
            wherein  
            the screen is a printer selection screen  
for selecting a printer.

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91. The method as claimed in claim 85,  
wherein

5 the screen is a print condition selection  
screen for selecting a print condition.

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92. The apparatus as claimed in claim 85,  
wherein

the print environment sharing service  
providing unit adds, in response to receipt of a  
15 connection request from another print environment  
sharing service providing unit, data related to the  
other print environment sharing service providing  
unit to service data including data related to other  
print environment service providing units to which  
20 the print environment sharing service providing unit  
can refer.

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93. The method as claimed in claim 85,  
wherein

the print environment sharing service  
providing unit deletes, in response to receipt of a  
5 disconnection request from another print environment  
sharing service providing unit, data related to the  
other print environment sharing service providing  
unit to service data including data related to other  
print environment service providing units to which  
10 the print environment sharing service providing unit  
can refer.

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94. The method as claimed in claim 92,  
wherein

the data related to the other sharing unit  
added to the service data are managed as one of upper  
20 level data, same level data, and lower level data  
depending on a relation between the print environment  
sharing service unit and the other print environment  
sharing service unit.

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95. The method as claimed in claim 85,  
wherein

5           the service providing apparatus further  
comprises the print environment sharing service  
providing unit.

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96. A computer program that causes a  
computer to perform the method as claimed in claim 85.

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97. A computer readable recording medium  
that stores the computer program as claimed in claim  
20 96.

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98. The apparatus as claimed in claim 37,

further comprising a printer data storage unit that stores the printer data.

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99. The method as claimed in claim 46, further comprising the step of transmitting a reservation request about printing.

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100. The method as claimed in claim 46, further comprising the step of transmitting a print request.

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101. The service providing apparatus as claimed in claim 65, further comprising:

a document overview acquisition unit that acquires, in response to receipt of a request from the user terminal, information about a document

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overview from a document management service providing  
unit that provides a management service of a document.